1. Apparatus for changing the temperature of a wafer for chemical mechanical polishing operations, the apparatus comprising:

a wafer carrier having a surface for supporting an entire back surface of the wafer;

a thermal energy transfer unit configured with a plurality of sections positioned at separate spaced locations, each separate section being effective to transfer a separate amount of energy relative to one of the respective separate spaced locations; and

a thermal energy detector a plurality of separate detectors spaced along a diameter of the wafer so that one of the separate detectors corresponds to each separate spaced location of the thermal energy transfer unit for detecting the temperatures at each separate spaced location.

2. An apparatus as recited in claim 1, further comprising:

a controller responsive to each of the separate detectors for controlling a transfer of thermal energy relative to each respective separate spaced section of the thermal energy transfer unit, the controller being connected to respective ones of the separate detectors corresponding to the separate locations for controlling a transfer of thermal energy relative to each of the separate spaced locations of the thermal energy transfer unit to control a thermal gradient across the diameter of the wafer.

3. An apparatus as recited in claim 1, wherein the diameter along which the thermal energy detectors are spaced intersects each of the separate spaced sections, and wherein each detector that is spaced along the diameter is configured to output a signal

representing the temperature of the corresponding separate spaced location; and the apparatus further comprises:

a system controller responsive to the signals from the detectors and programmed to provide an indication of an actual thermal gradient across the diameter that intersects the spaced sections, the system controller being programmed to compare the actual thermal gradient to a desired thermal gradient across the across the diameter that intersects the spaced sections; and

a thermal energy controller responsive to the system controller for controlling a supply of thermal energy to each separate spaced section of the thermal energy transfer unit to render the actual thermal gradient equal to the desired thermal gradient across the spaced sections along the diameter.

4. Apparatus for controlling local planarization properties on a wafer during the performance of a chemical mechanical polishing operation on the wafer, the apparatus comprising:

a wafer carrier;

a thermal energy transfer unit on the wafer carrier for transferring energy relative to the wafer, the thermal energy transfer unit having a plurality of separate thermal energy transfer sections spaced along a diameter of the wafer ; and

a thermal energy detector system adjacent to the wafer for separately detecting a temperature of locations on the wafer at which the diameter intersects the separate sections of the thermal energy transfer unit.

5. Apparatus as recited in claim 4, further comprising:

a controller responsive to the detector system separately detecting a temperature of each of the locations for controlling the transfer of thermal energy relative to the sections of the thermal energy transfer unit spaced along the diameter to control a thermal gradient along the diameter.

6. Apparatus for controlling the temperature of a wafer for chemical mechanical polishing operations, the apparatus comprising:

a wafer carrier having a wafer mounting surface;

a thermal energy transfer unit adjacent to the wafer mounting surface for transferring energy relative to the wafer, the thermal energy transfer unit being configured to transfer the thermal energy to establish a thermal gradient across a surface of the wafer;

a thermal energy detector unit adjacent to the wafer mounting surface for detecting the temperatures of the thermal gradient at locations across the surface of the wafer; and

a controller responsive to the detector unit for controlling the transfer of thermal energy relative to the thermal energy transfer unit to control the temperatures of the thermal gradient.

7. An apparatus as recited in claim 6, wherein the thermal energy transfer unit is configured adjacent to a center of the wafer, and the thermal energy detector is configured to detect the temperatures of the thermal gradient along an arcuate path around the center of the wafer.

8. An apparatus as recited in claim 6, wherein:

the configuration of the thermal energy transfer unit is circular and the thermal energy transfer unit is located adjacent to an outer edge of the wafer; and

the thermal energy detector is defined by a plurality of detectors positioned in first and second circular arrays.

9. An apparatus as recited in claim 8, wherein:

the first circular array corresponds to the circular configuration of the thermal energy transfer unit and the second circular array is adjacent to a center of the wafer.

10. An apparatus as recited in claim 8, wherein:

the controller responds to the detector unit indicating a low temperature at an area of the surface of the wafer by connecting a source of thermal energy to the thermal energy transfer unit to raise the temperature of the area.

11. An apparatus as recited in claim 8, wherein:

the controller responds to the detector unit indicating a high temperature at an area of the surface of the wafer by connecting a receiver of thermal energy to the thermal energy transfer unit to reduce the temperature of the area.

12. An apparatus as recited in claim 9, wherein:

the thermal energy transfer unit is configured to transfer the thermal energy relative to a plurality of areas across the surface of the wafer to establish a uniform thermal condition across the surface, the plurality of areas intersecting a diameter of the wafer; and

the thermal energy detector is configured to detect the temperature of the plurality of areas across the surface and across the diameter of the wafer.